Cosmology and the Puzzle of Early Printing in Old Cyrillic [1]

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1. The Puzzle of Early Printing in Old Cyrillic

1.1 *Introduction*

If a specialist in the early history of printing in Western Europe were to take in hand almost any book printed in the Old Cyrillic alphabet during the sixteenth, seventeenth or eighteenth century, his first reaction might well be one of surprise at its seemingly archaic appearance (see, for example, fig. 1). It will, in most instances, lack a title page,[2] though it will have a colophon. It will use only a very few fonts of black-letter type. Its typesetters will have taken hardly any pains over such things as the straightness of the lines of type, the justification of margins, and all such matters of layout. Its printer will probably have failed to align black and red printing very well. The use of capital letters and marks of punctuation in it will strike him as primitive and unsophisticated. In all these and many other respects that Old Cyrillic book will remind him far more of the very earliest printed books, that is, with books printed before about 1475, than of books printed in Western Europe after about 1500.

Some of his reaction, of course, will be due to his ignorance of the conventions of reading and writing in the Old Cyrillic alphabet, where the rules for capitalisation and punctuation are different from ours in the West. Even so, his reaction is good evidence that printing in Old Cyrillic before 1800 evolved and developed along very different lines, and yielded very different results, than did printing in the Latin alphabet in Western Europe during those same three hundred and fifty years.

This difference is the 'puzzle of early printing in Old Cyrillic' to which the title of the present paper refers. This puzzle has occupied me for several decades now. In 1988 I said a few things about it in a paper for a conference on 'The Millenium of the Baptism of Rus'', held at the Library of Congress. Four years later that paper was published in the form of a scholarly article in *Solanus* under the title 'Cyrillic and Glagolitic Printing and the Eisenstein Thesis'.[3]

[1] The present article is a revised version of a Pforzheimer Lecture delivered at the New York Public Library on 21 October 2003, as part of the series 'Book Culture in Russia: From Manuscript to Malevich'.

[2] Exceptionally, very many Old Cyrillic books printed in Ukraine and Belarus were issued with title pages, like Western European books of the same period. This is to be explained by the peculiar position of these lands, which straddled the border between Slavia Catholica and Slavia Orthodoxa.

[3] 'Cyrillic and Glagolitic Printing and the Eisenstein Thesis', *Solanus* (new series), 6 (1992), pp. 3–26.

Now, sixteen years later, it seems that I had cast my net far too narrowly in 1988, and that my conclusions at that time had been far too constrained by the usual concerns, methods and presuppositions of Western historians of printing and historians of the book—in particular by my critical focus on Elizabeth L. Eisenstein's complex thesis. In 1988 I examined the data from an external point of view, comparing Old Cyrillic printing before 1800 with printing in other alphabets during the same centuries. Now I intend to look at the very same data from an internal point of view, that is, in light of the system of Church Slavonic literature taken as a whole.[4] Since the data are the same, it will be enough to refer the reader to the former article for documentation.[5]

1.2 *The Invention and Spread of Printing*

The art and craft of printing books with moveable type, in Eastern and Western Europe alike, sprang from the elegant new technology that had been invented by Johannes Gutenberg around the year 1440 and perfected over the next few decades in the cities of Mainz and Strasbourg. From these two cities it rapidly spread throughout all Western and Eastern Europe, even crossing the great ecclesiastical boundary between the Roman Catholic and the Eastern Orthodox halves of Europe. Indeed, its eastward spread was brought to a halt only at the frontier between Christianity and Islam, because of Islamic political and theological reservations about the impact of the new technology.

Of course Gutenberg's first books were printed in the Latin or Roman alphabet, which was used for almost all the languages of Western Europe. By the year 1475, however, moveable type had also been cut for the Greek and Hebrew alphabets. Not long thereafter type was also cut for the two historic alphabets of the Slavs, Glagolitic and Cyrillic. The first printed book in Glagolitic, a Roman Catholic *Missal*, appeared in 1483. In the years 1491–1493 the first books were printed in Cyrillic, a set of five Eastern Orthodox liturgical books.

These five alphabets were the *only* ones for which fonts of moveable type were cut and cast during the fifteenth century. Only in the course of the next two centuries did a very few other peoples begin to follow the example of the Greeks, the Hebrews and the Slavs in this respect. The first of them were the Armenians, who began to print books in their own alphabet and language in the year 1511 or 1512.[6]

[4] Throughout this paper I will use the term *literature* in the broad sense of all written works of verbal art (in Russian, *slovesnost'*), not in the narrow sense of *belles lettres* (in Russian, *khudozhestvennaia literatura*).

[5] Mathiesen 1992 (note 3).

[6] For early printing in all the non-Latin alphabets see Robert Mathiesen, *The Great Polyglot Bibles: The Impact of Printing on Religion in the Sixteenth and Seventeenth Centuries* (Providence, R.I., The John Carter Brown Library, 1985), and Mathiesen 1992 (note 3).

1.3 *The Initial Advantages of Printing*

Everywhere in Europe the earliest books printed with moveable type very much resembled the manuscript books that were still being produced in large numbers in the fifteenth century. Despite the new technology of printing, it was still the labour of countless scribes, and not that of those new craftsmen called 'printers', that defined for most fifteenth-century readers what a book *was*: what it looked and felt like, and how it could be read or otherwise used. The earliest printers carefully preserved the 'look and feel'—to use a modern phrase—of manuscripts in their first printed books.[7]

Although the invention of printing did not immediately affect the look and feel of a book, many scholars and printers of the fifteenth and sixteenth centuries nevertheless saw that it altered the culture of the book in ways that greatly benefited scholarship. Their statements to this effect have been collected and discussed in several places, and need not be cited here at length.[8] It will be enough to summarise three points that they made over and over again:

- Many more copies of any book could be produced in a given time by a printer than by a scribe.
- This greatly lowered the cost of each copy of that book.
- This also allowed much wider dissemination of that book.

1.4 *Regional Differentiation of Early Printing*

We tend to think, in our modern way, that the march of science and technology is inevitable and predetermined. Conditioned by our culture, we naively assume that *any new invention will inevitably be developed to its maximum usefulness (unless some outside force intervenes), and that the path of its inevitable development will be uniquely predetermined by the potential of the technology itself.*

Yet this was not the case with the invention of printing. Gutenberg's new

[7] Ernst Schulz, *Aufgaben und Ziele der Inkunabelforschung* (München, Mandruck, 1924), transl. by Glenys Waldman as *The Study of Incunables: Problems and Aims* (Philadelphia, Philobiblon Club, 1977); E. Ph. Goldschmidt, *Medieval Texts and Their First Appearance in Print* (London, The Bibliographical Society, 1943), Supplement to the Bibliographical Society's Transactions, 16; Rudolph Hirsch, *Printing, Selling and Reading, 1450–1550*, 2nd edn (Wiesbaden, Otto Harrassowitz, 1974); Ferdinand Geldner, *Inkunabelkunde: eine Einführung in die Welt des frühsten Buchdrucks* (Wiesbaden, Dr Ludwig Reichert Verlag, 1978), chapter 5, 'Elemente des Buch- und Bibliothekswesens', 5.

[8] The most significant texts were printed by: Rush C. Hawkins, 'Some Late Statements about Early Printing', *The Bibliographer* 1 (1902), pp. 61–68; Axel Josephson, 'The Literature of the Invention of Printing: a Bibliographical Study', *Papers of the Bibliographical Society of America* 11 (1917/18) , pp. 1–14, 12, p. 66; Alfred W. Pollard, *An Essay on Colophons with Specimens and Translations* (Chicago, The Caxton Club, 1905); and thoroughly analysed by Hans Widmann, *Vom Nutzen und Nachteil der Erfindung des Buchdrucks—aus der Sicht der Zeitgenossen des Erfinders* (Mainz, Verlag der Gutenberg-Gesellschaft, 1973), Kleiner Druck der Gutenberg-Gesellschaft, 92.

technology developed differently and yielded very different results in the two distinct halves of Europe that concern us today. The lines that divide these two halves of Europe are cultural and ecclesiastical, but secondarily also linguistic and ethnic.

One of these halves comprises the nations and peoples that originally fell under the jurisdiction of the Roman Catholic Church (and eventually that of various Protestant Churches). This has been called ***Europa Catholica*** or ***Europa Romana***, or more simply Western Europe; the Slavs who are part of it may be called ***Slavia Catholica*** or ***Slavia Romana***.

To the other half belong the nations and peoples who are in communion with the Oecumenical Patriarch at Constantinople, and constitute the Eastern Orthodox Churches. This is ***Europa Orthodoxa***. The greater part of these peoples are Slavic in language and culture, and may collectively be called ***Slavia Orthodoxa***. The historic ecclesiastical language of Slavia Orthodoxa is Church Slavonic, and the alphabet in which it is written is called Old Cyrillic.[9]

It is early printing in the Old Cyrillic alphabet and in the Church Slavonic language that is our subject in this paper. We are not concerned here in the slightest with printing in Peter the Great's New Cyrillic alphabet (*grazhdanskii shrift*), intended for the Russian language, nor with printing in any other modern Slavic language or alphabet, nor with printing after the year 1800. Indeed, we are not very much concerned with printing after the founding of Moscow University in 1755. During the second half of the eighteenth century printing in the New Cyrillic alphabet (in terms of number of titles published) began to predominate over Old Cyrillic printing, while at the same time the traditional cosmology of the Orthodox Churches lost most of its imaginative hold on the culture of the book in Slavia Orthodoxa.[10]

[9] For these terms, and especially *Slavia Orthodoxa*, see: Riccardo Picchio, 'O cerkiewnosłowiańskiej wspólnocie kulturalno-językowej', *Sprawozdania z posiedzeń komisji 1962* (Cracow, Polska Akademia nauk, Oddział w Krakowie, 1962), pp. 449–54; his 'A proposito della Slavia ortodossa e della comunità linguistica slava ecclesiastica', *Ricerche Slavistiche* 11 (1963), pp. 105–27; his 'Slave ecclésiastique, slavons et rédactions', *To Honor Roman Jakobson* (The Hague, Mouton, 1967), pp. 1527–44, Janua linguarum, Series maior, 31–33; his *Letteratura della Slavia ortodossa: IX–XVIII sec.* (Bari, Dedalo, 1991); Harvey Goldblatt, 'A Bio-Bibliographical Profile of Riccardo Picchio', *Studia Slavica, Mediaevalia et Humanistica Riccardo Picchio Dicata*, ed. Michele Colucci, Guiseppe dell' Agata and Harvey Goldblatt (Rome, Edizioni dell'Ateneo, 1986), pp. XXIII–LIX; and Robert Mathiesen, 'The System and Nature of Church Slavonic Literature (Fifty Theses)', *Slavia Orthodoxa and Slavia Romana: Essays Presented to Riccardo Picchio by His Students on the Occasion of His Eightieth Birthday*, ed. Harvey Goldblatt, Krasimir Stanchev and Giorgio Ziffer (New Haven, Conn., Yale Center for International and Area Studies, 2004), Yale Russian and East European Publications, 15.

[10] Gary Marker, *Printing, Publishing and the Origins of Intellectual Life in Russia, 1700–1800* (Princeton, N.J., Princeton University Press, 1985), tables 2.3, 3.1 and 4.1, tallies the number of bibliographically distinct items printed in the Old Cyrillic alphabet and in the New Cyrillic alphabet in Russia for the fifteen successive five-year periods from 1725 up to 1800.

Printing in Slavia Catholica developed in much the same way as in other parts of Western Europe, and it does not possess any sharp distinguishing features of its own. *Printing in Slavia Orthodoxa, however, developed in a strikingly different way, and yielded very different results.*

It is instructive, at the outset of our investigation, simply to tabulate the number of bibliographically distinct products of the printing press, century by century, for Europa (and Slavia) Catholica on the one hand, and for Slavia Orthodoxa on the other. The following table gives reasonably precise numbers for printing in the Cyrillic and Glagolitic alphabets and approximate numbers for printing in the Latin alphabet. It also includes precise numbers for printing in the Armenian alphabet and approximate numbers for printing in the Hebrew alphabet.[11]

	Europa Catholica:		*Slavia Orthodoxa:*		*Other alphabet:*	
Century	*Latin*	*Glagolitic*	*Old Cyrillic*	*New Cyrillic*	*Armenian*	*Hebrew*
15th	30,000	5	8	0	0	200
16th	200,000	30	269	0	22	4,000
17th	? 2,000,000	7	1,084	0	141	?
18th	? 25,000,000	16	3,636	11,065	767	?
Total	? 27,230,000	58	4,997	11,065	930	?

Comparison of Printing in Various Alphabets: Number of Editions
(15th–18th centuries)

This table shows that Latin-alphabet printing in Europa Catholica was a far larger enterprise than printing in any other part of the world. To be sure, the nearly 5,000 editions printed in Old Cyrillic through the year 1800 compare quite favorably with the less than 1,000 editions printed in the Armenian alphabet, to say nothing of the fifty-eight editions printed in Glagolitic—but they compare not at all with the many million editions in the Latin alphabet.

In consequence of these numbers, the output of printed books in Western

[11] The figures are from Mathiesen 1992 (note 3), tables 5–8, where the sources are cited. The editor has kindly updated the number of sixteenth-century Old Cyrillic editions in the light of of two more recently published union catalogues, which the author has been unable to consult: Evgenij L. Nemirovskij, *Gesamtkatalog der Frühdrucke in kyrillischer Schrift*, 6 volumes published in the series Bibliotheca Bibliographica Aureliana, vols 140, 152, 155, 170, 171, 187 (Baden-Baden, Verlag Valentin Koerner, 1996–2003), and a further 5 in preparation; A. A. Guseva, *Izdaniia kirillovskogo shrifta vtoroi poloviny XVI veka: svodnyi catalog* (Moscow, Indrik, 2003), 2 vols. (The figures for Latin-alphabet printing in the seventeenth and eighteenth centuries are nothing more than my own *low* educated guesses.)

Europe had greatly outstripped the output of new books in manuscript as early as the end of the sixteenth century. After that century only a relatively few forbidden kinds of books—e.g. *grimoires* and other magical handbooks—continued to circulate more widely in manuscript than in print.

One result of this rapid shift in the balance between manuscript books and printed books was that *by about the year 1550 the power to determine the proper 'look and feel' of a book had shifted from scribes to printers in Western Europe.*

This new power enabled printers in Western Europe to innovate in many other ways. By the year 1600 most Western European printed books no longer looked much like books in manuscript at all: a hasty glance suffices to distinguish the one from the other. Title pages and their special formats, tables of contents and indices, footnotes and sidenotes, woodcuts, copperplates and steel engravings, the use of italic and bold fonts, indeed the complex use of many different fonts in a variety of sizes, and many other familiar features of the modern printed book—all these things had come to be the norm by the year 1600.[12]

All these features of the printed book in Western Europe required a high degree of technical competence, and most printers rose to the challenge. *Clumsy* printing—lines of type not straight, margins poorly justified, red and black printing imperfectly aligned, inconsistent page layout, poor editing, and all kinds of sloppy presswork—soon became comparatively rare in Western Europe. These were the features of *'prentice work*, and no master printer worth his salt would be caught dead with a piece of *'prentice work* to his name. Indeed, Western European printing, like many other trades, made use of the apprentice system: boys—and occasionally girls—learned the rudiments of printing as apprentices under the sharp eye of a master printer, then travelled as journeymen to work under other master printers elsewhere, and only after some years' careful training became master printers themselves, legally qualified to set up shop on their own.

In sharp contrast, *in Slavia Orthodoxa printed books did not become numerous enough to outweigh books in manuscript until around 1800*, or even somewhat later. In consequence, the proper 'look and feel' of a printed book in Old Cyrillic continued to be set by scribes more than by printers for many centuries after this had ceased to be the case in Western Europe.

Moreover, because there were so few presses in operation, an apprentice system like that of Western Europe could not work very well in Slavia Orthodoxa. There may be some evidence for something vaguely like an apprentice system in the financial records of the largest of all the Old Cyrillic print shops, the Moscow Printing Office (*Pechatnyi dvor*), but it never worked very well

[12] Geldner (note 7), chapter 5.

there, and it is not found elsewhere.[13] With relatively few exceptions, printers of Old Cyrillic books usually did not achieve the virtuoso level of skill and technical competence that characterised the better presses of Western Europe. As a direct consequence of this, Old Cyrillic printed books rarely show the higher forms of sophistication in book design until after 1800. Only in the nineteenth century did this state of affairs change, with the wholesale introduction of Western methods of printing into Slavia Orthodoxa, with such new features as printing from stereotyped plates, not directly from moveable type. *These changes mark the end of the period of early printing in Slavia Orthodoxa*, several centuries later than in Western Europe.

1.5 *The Repertory of Old Cyrillic Printed Books*

Yet all the differences which have been mentioned up to now are basically matters of technology. Historians of printing and historians of the book may find them intensely interesting. Most other people are easily bored by them. I apologise for dwelling on them at all, and would not have done so had they not been needed for what follows. Let us turn now to the most significant of all the distinctive characteristics of Old Cyrillic printing.

There is no good technical term, it seems, for what we must consider now. In simple English, it is the matter of which books were chosen for printing, and which were not, but continued to circulate only in manuscript. One might speak of the 'inventory' of early printing for a given time and place, as if it were the contents of a great metaphorical warehouse. I prefer the term ***repertory***, which echoes the title of an early masterwork of systematic bibliography: Ludwig Hain's *Repertorium bibliographicum* (1826–1838), which is the first detailed bibliography of the entire body of books printed during the fifteenth century.

In Western Europe the repertory of early printing was large and varied, and it came fairly close to replicating the repertory of fourteenth-, fifteenth- and sixteenth-century books in manuscript. Because of this, and also because of the early numerical advantage of printed books over manuscript ones, in Western Europe *the printing press acted as a kind of filter.* In other words, those numerous earlier texts which had made it into print by about the year 1600 continued to be read and discussed by the literate public long after that date, whereas those relatively few texts which had not made it into print by that time tended to vanish from public discourse, and to become the exclusive domain

[13] See the records published and summarised by: I. Mansvetov, *Kak u nas pravilis' tserkovnye knigi: material dlia istorii knizhnoi spravy v XVII stoletii (po bumagam arkhiva Tipografskoi biblioteki v Moskve)* (Moscow, Lavrov, 1883); and Pavel Nikolaevskii, 'Moskovskii pechatnyi dvor pri patriarkhe Nikone', *Khristianskoe chtenie*, 1890/1, pp. 114–41, 1890/5, pp. 434–67, 1891/1, pp. 147–86, 1891/4, pp. 151-86.

of the few professional scholars who continued to read books in manuscript.[14]

As the centuries passed, these books in manuscript came to be treated as rare and precious treasures in Western Europe (and the Americas), and were made available for reading under increasingly stringent conditions.[15] Moreover, as printed books diverged ever more sharply in their look and feel from books in manuscript, even the mere ability effortlessly to read a book in manuscript or an early printed book became less and less common. At present this ability is taught in special courses as an ancillary discipline of scholarship, of interest mostly to graduate students.[16]

In Slavia Orthodoxa, however, most Old Cyrillic printed books continued to have the look and feel of books in manuscript well into the eighteenth century, and countless scribes continued to produce manuscript books in great quantity well into the eighteenth century as well. In Slavia Orthodoxa the printing press did not begin to act as a filter until the nineteenth century. Up to about 1800, anyone who could read an Old Cyrillic printed book could read an Old Cyrillic manuscript book of the same period with no greater effort.

Yet these facts do not explain the most significant difference between printing in Western Europe and printing in Slavia Orthodoxa, namely, the *very limited repertory of Old Cyrillic printing* even when compared to the repertory of Old Cyrillic books in manuscript—to say nothing of a comparison with the repertory of printed books in the Latin alphabet! There were about 5,000 distinct bibliographical items printed in the Old Cyrillic alphabet between the years 1491 and 1800, and *over three-fourths of these books (about 3,800) are editions of the same few dozen titles*, over and over again.[17] Moreover, these few dozen works include most of the really long texts in print, so if one counts not

[14] Mathiesen 1992 (note 3), pp. 16–17; see also: Curt F. Bühler, 'Authors and Incunabula', in *Studies in Art and Literature for Belle da Costa Greene*, ed. Dorothy Miner (Princeton, N.J., Princeton Universty Press, 1954), pp. 401–406; reprinted in Bühler, *Early Books and Manuscripts: Forty Years of Research* (New York, The Grolier Club / The Pierpont Morgan Library, 1973), pp. 212–19); and Robert Steele, 'What Fifteenth-Century Books are About', *The Library*, Series 2, 4 (1903), pp. 337–54; 5 (1904), pp. 337–58; 6 (1905), pp. 137–55; 8 (1907), pp. 225–38.

[15] As late as the 1930s, for instance, any professor or student at my own university (Brown University) was free to check out any of the few fifteenth-century printed books that were in the library's general circulating collection and carry it away to his home or dormitory, handling it just as casually as any book published during his own lifetime.

[16] Since the invention of the personal computer and the world-wide web, it must be remarked, something like this has begun to happen again in the academic world. The rapid growth of on-line publishing and on-line reference collections is already beginning to filter the works that will be easily accessible to future generations of students. Likewise, the day will come when the ability effortlessly to read an original printed book of the nineteenth or early twentieth century, with its ever more brittle paper and its ever more out-of-date means of data search and retrieval, will have become as advanced and specialised a skill as the ability to handle and read a fifteenth-century manuscript book is now.

[17] For the various *Gesamtkataloge* from which this figure has been obtained, see Mathiesen 1992 (note 3), p. 12 (sources for table 6) and note 11 (above).

distinct bibliographical items, but distinct leaves or pages, the fraction rises from three-fourths to well over seven-eighths.

What, then, are these few dozen titles that outweigh all others in the history of Old Cyrillic printing? They are the *liturgical books of the Slavic Orthodox Churches*, which we shall consider more fully below. Here it is enough to note that the corresponding Roman Catholic liturgical books in the Latin alphabet and language, though frequently printed and reprinted, comprise a far smaller fraction of the entire repertory of early printing in the Latin alphabet—certainly no more than one hundredth of the total, and probably much less than that. In sharp contrast to Western Europe, *early printing in Slavia Orthodoxa was employed before all else to produce a very large quantity of Eastern Orthodox liturgical books*.

This is not a simple reflection of contemporary scribal practice. Although scribes produced very many manuscripts of these same liturgical books during the centuries before printing, and continued to do so for some time afterwards, they also produced many manuscripts of other books, often quite lengthy ones. Most of these other books never made it into print, but continued to circulate in manuscript well into the nineteenth century. In sharp contrast to the situation in Western Europe, early printed books did not crowd manuscript books out of the book trade until well into the 1800s.

1.6 *How Can We Approach the Puzzle?*

Thus we have specified some of the significant differences between Latin-alphabet printing in Western Europe and Old Cyrillic printing in Slavia Orthodoxa up to 1800. How may we best explain these differences? What is their import?

For about a century now a long succession of scholars has discussed what Georges Florovsky once called (in 1937) the 'ancient, enduring and centuries long intellectual silence' of Slavia Orthodoxa.[18] Certainly these cultural differences in printing could be taken as manifestations of such a putative 'intellectual silence', especially if one looks at them from a modern Western European point of view. But this merely broadens our puzzle without solving it; in fact, it pushes our efforts one step backward. Scholarship has not yet managed to account for this 'intellectual silence', nor have scholars even arrived at any sort of firm consensus about the nature of the phenomenon to which this term refers.[19]

[18] Georges Florovsky, *Puti russkogo Bogosloviia* (Paris, YMCA Press, 1937), p. 1, transl. by Robert L. Nichols as *Ways of Russian Theology* (Belmont, Mass., Nordland Publishing Co., 1979–1987), 2 vols. (The original Russian phrase is *vekovoe, slishkom dolgoe i zatiazhnoe russkoe molchanie*; the sonorous English rendition quoted above is that of the translator.)

[19] See: Florovsky, 'The Problem of Old Russian Culture', *Slavic Review* 21 (1962), pp. 1–15, and his 'Reply', *Slavic Review* 21 (1962), pp. 35–42; Nikolay Andreev, 'Pagan and Christian Elements in Old Russia', *Slavic Review* 21 (1962), pp. 16–23; James H. Billington, 'Images of

Often it is easier to solve a well-defined small puzzle first, and then extend one's solution to larger puzzles of the same character. This will be our approach here.

As just mentioned, *about three-fourths of the repertory of early printed books in the Old Cyrillic alphabet were liturgical texts of the Slavic Orthodox Churches: they form the core and the bulk of that repertory.*

This was not the *necessary and inevitable* result of any economic or sociological or political cause. The market for many other books was strong enough that it would have paid a printer to print them, as shown by the large numbers of these books that have survived in manuscript from the centuries under consideration; and the same large numbers show that these other texts continued to circulate and find readers in Slavia Orthodoxa. Nor was there ever a general prohibition from the high authorities of church or state against the printing of other texts than liturgical ones; indeed, the occasional non-liturgical book was printed from time to time. And so forth.

One can easily overturn each and every *deterministic* historical argument that the preponderance of liturgical books in the repertory of early printing in Old Cyrillic was the necessary and inevitable consequence of some combination of economic or sociological or political factors. We are not in the realm of historical *necessity* here at all, but in that of historical *contingency*, that is, of deliberate choices made by people who could have chosen otherwise than they did.

Why, then, did the early printers of Slavia Orthodoxa, working in many lands and centuries, deliberately choose over and over and over again to print so many editions of the same few liturgical books of the Slavic Orthodox Churches, ignoring the real market for printed editions of almost all other texts?

To answer this question we must first look at these liturgical books from the point of view of the Orthodox Slavs who bought and used them. We must ask what place they held within the literary and cultural heritage of Slavia Orthodoxa, that is, how they were used in that culture. Only once we have answered that question will we be able to solve the puzzle of early printing in the Old Cyrillic alphabet.

Muscovy', *Slavic Review* 21 (1962), pp. 24–34; Francis J. Thomson, 'The Corpus of Slavonic Translations Available in Muscovy: The Cause of Old Russia's Intellectual Silence and a Contributory Factor to Muscovite Autarky', *Christianity and the Eastern Slavs*, I: *Slavic Cultures in the Middle Ages*, ed. Boris Gasparov and Olga Raevsky-Hughes (Berkeley / Los Angeles / Oxford, University of California Press, 1993), pp. 179–214, California Slavic Studies, XVI; William Veder, 'Old Russia's "Intellectual Silence" Reconsidered', *Medieval Russian Culture*, II (Berkeley / Los Angeles / Oxford, University of California Press, 1994), pp. 18–28, California Slavic Studies, XIX.

2. Literature, Liturgy and Cosmology in Slavia Orthodoxa

2.1 *The System of Church Slavonic Literature*

Many people, when they think about some particular literature at all, say, English literature or Russian literature, think of it as a vast ocean of works by countless authors, some great, others less so. If they organise this material at all, they do so historically, that is, in the familiar periods of literature and the familiar literary movements that have become the stock-in-trade of all college survey courses. Alternatively, they organise them by kind of works, e.g. poetry versus prose, the novel versus the short story, and so forth. All this history or typology is very superficial, and does not reach the heart of what makes each and every literature a unified whole.

But the truth of the matter seems to me to be that *every literature, taken as a whole, exhibits a* ***structure*** *or* ***system*** *all its own, by virtue of which all works of that literature are interrelated to one another.* Of necessity, this structure is always far more subtle than the history of literary movements, or than a detailed typology of literary works by their genres or other features.

In fairness to the reader, it must be noted here that there are few topics in the theory of literature more controversial than this one. Not only is there no consensus on the main features of the structure of any particular literature, but there is not even any agreement whether a literature, taken as a whole, *has* a structure in this sense of the term. In another article I have already staked my position in this controversy, and argued for it as strongly as I know how.[20] Here I shall merely summarise what I have defended there.

Thus I claim that the literature of Slavia Orthodoxa from its beginning up to about 1700 has been organised in terms of a system all its own. This literature is in several respects an odd literature, and there are many reasons why it is not much to the tastes of modern readers. Here are some of its odder features.

- First, it *consists chiefly of translations*, as a rule made from Byzantine works in Greek. Original works in Church Slavonic are a very small part of Church Slavonic literature.
- Second it *de-emphasises originality and authorial identity*. Original works hide the light of their originality under the proverbial bushel. With few exceptions, they are modelled very closely on existing translated works. They are very often ascribed to the long-dead Byzantine authors of these translated works such as St John Chrysostom, or they are anonymous.
- Third, it is primarily *a liturgical literature*, that is, a literature in which almost every work has its precisely specified place(s) within

[20] Mathiesen 2004 (note 9), on which part 2 of this article depends heavily.

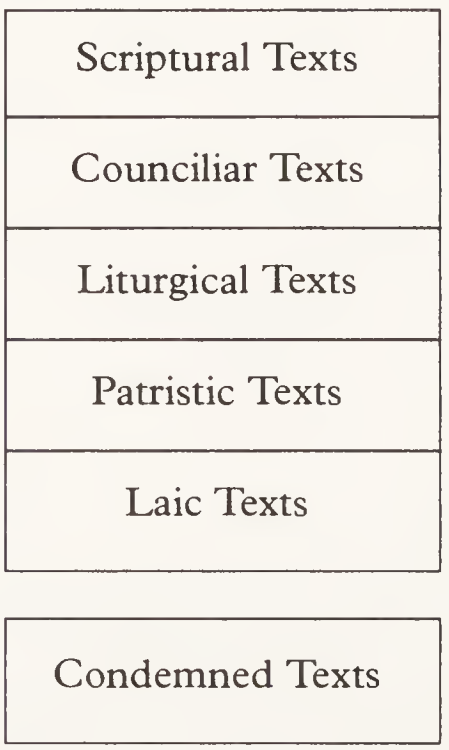
the liturgy and ritual of the Orthodox Churches. These works are to be read on those specified occasions; if such a work is read at any other time or place, this transgresses the norms of the cultures that make up Slavia Orthodoxa. Such a transgression is more or less severe depending on the work that was read and the circumstances in which it was read, but it is always a transgression.

- Fourth, many works of Church Slavonic literature, when read according to the norms of the culture of Slavia Orthodoxa, do not stand alone. Rather, they interact with one another and mesh with one another in complicated and ever-shifting patterns, much as the pieces of colored glass in a kaleidoscope combine with one another to produce ever-shifting patterns of light and colour. This may be called the *kaleidoscopic nature of Church Slavonic literature*.

Since Church Slavonic literature is so odd, the structure that it exhibits will also be an odd one. I know of nothing like it anywhere in the literatures of Western Europe of any period. This may be why the structure of Church Slavonic literature has seemed opaque to all but a few discerning cultural and literary historians. However, the works of that literature offer many clues to this structure if—and *only* if—one examines them not in modern scholarly editions, but in their original form and context as they are found in the manuscripts and early printed books.

Following up these clues, we see that *the structure of Church Slavonic literature as a whole is organised by two distinct parameters* that are applicable to almost any work of that literature. (There are a few texts of which this is not true.)

One of these parameters is the level of canonical authority that any given work has, that is, how authoritative it is for establishing the doctrine and practice of the Orthodox Churches. Texts are classified according to several descending levels of authority. We may present the most important of these levels in the following figure:



Levels of Canonical Authority
in Slavic Orthodoxa

The other parameter is liturgical, and thus ultimately cosmological. The Orthodox Churches have always insisted that liturgy and cosmology are intimately interrelated.

Almost every text in Church Slavonic, whether it is original or translated, has a designated place and a specific use within the liturgy and ritual of the Slavic Orthodox Church. This place is almost always identified in the manuscripts and the early printed books, though most scholarly editions do not bother to reproduce the words that specify this. This is what Biblical scholars call the *Sitz im Leben* of that particular text, that is, the site or position that it has in the worship and the lives of those who use or read it.

This brings us directly to certain specifics of the liturgy and ritual of the Slavic Orthodox Churches, and to their basis in the traditional cosmology of the Orthodox Churches.[21]

2.2 *The System of the Liturgy and Ritual of the Slavic Orthodox Churches*

The liturgy and ritual of the Slavic Orthodox Churches is extraordinarily complicated, but also of great elegance. If in Western Europe a priest needs very few books to conduct Roman Catholic worship—a *Missal*, a *Breviary* and a *Ritual* will generally suffice, except for the music—in the Orthodox Churches it is very much otherwise. Here Christian liturgy and ritual is not something that a priest can do wholly by himself, though parts of it are within the competence of any layman or any priest in the privacy of his own room or monastic cell. The Eucharist is held to be a congregational action, and at least a vestigial congregation should be present, if only in the form of a single lector.

Since Orthodox liturgy and ritual is essentially the work of a congregation, not just a priest, its texts were never shortened and synthesised into compendious volumes like the Roman Catholic *Missal* and *Breviary* or the Church of England's *Book of Common Prayer*. They have remained distributed through a rather large number of distinct books, no one of which conveys anything like the entire shape and structure of the Church's worship. The main model on which these many books are organised is a cosmological one, at the heart of which lies an elaborate doctrine of the cycles of time that make up the course

[21] For the liturgy, the liturgical calendar and the liturgical books of Slavia Orthodoxa see: [N. Grigor′ev], *Istoricheskoe obozrenie Bogosluzhebnykh knig Greko-Rossiiskoi Tserkvi* (Kiev, Kievo-pecherskaia lavra, 1836); Konstantin Nikol′skii, *Posobie k uzucheniiu ustava Bogosluzheniia Pravoslavnoi Tserkvi*, 6th edn (St Petersburg, Gosudarstvenaia tipografiia, 1900); Alexander Schmemann, *Vvedenie v liturgicheskoe Bogoslovie* (Paris, YMCA Press, 1961), transl. by Ashleigh E. Moorhouse as *Introduction to Liturgical Theology* (London, The Faith Press / Bangor, Maine, The American Orthodox Press, 1966); Đorđe Trifunović, *Azbučnik srpskih srednjovekovnih književnih pojmova* (Belgrade, Vuk Karađić, 1974). See also Vladmir Lossky, *Essai sur la Théologie mystique de l'Église d'Orient* ([Paris], Aubier, 1944), transl. anonymously as *The Mystical Theology of the Eastern Church* (Cambridge / London, James Clarke, 1957) for the general world-view of Slavia Orthodoxa.

of history.

Six of these cycles of time must be mentioned here. The first three of them are also used in our own Western cultures today:

- ***The Cycle of the Day*** is a recurring cycle from one sunset to the next, and contains the twelve numbered hours of the night and the twelve numbered hours of the day.
- ***The Cycle of the Week*** is a recurring cycle from one Sunday to the next, and contains seven numbered days, each of which also has a name.
- ***The Cycle of the Year*** is a recurring cycle of 365 days, or of 366 days every fourth year, and contains the twelve named months.

Two other cycles of time are employed to determine the date of Easter, which must always be on a Sunday, but can never fall on the same date from one year to the next.

Indeed, Sundays themselves can never fall on the same dates from one year to the next, because a common year consists of fifty-two full weeks and one day left over, while a leap year has two days left over at the end of its fifty-two full weeks. The change in the dates of Sundays from one year to the next repeats itself every twenty-eight years. This 28-year cycle is called the ***Cycle of the Sun***, and it is used to determine on which dates Sunday will fall in any given year.

But Easter cannot fall on just any random Sunday. According to the First Oecumenical Council at Nicea, Easter must be celebrated on the first Sunday *after* the date of the Spring Full Moon, which in turn is the first Full Moon *on or after* the Spring Equinox.

To compute these Full Moons in all their astronomical detail was too complex for the Orthodox Churches, which have always used approximations of their true dates. By these approximations, the Spring Equinox always occurs on 21 March, and the Spring Full Moons always occur on one or another of nineteen possible dates between 21 March and 18 April (that is, nineteen specific dates out of the twenty-nine dates that fall within those limits). The nineteen dates for the Spring Full Moon repeat themselves every nineteen years. This 19-year cycle is called the ***Cycle of the Moon***, and it is used to determine the date of the Spring Full Moon in any given year.

So the Cycle of the Moon tells us the date of the Spring Full Moon for any given year, and then the Cycle of the Sun tells us which of the seven days after that Spring Full Moon will be a Sunday. That Sunday will be Easter.

This yields a range of thirty-five possible dates for Easter, between 22 March and 25 April. From one year to the next the date of the Spring Full Moon changes according to a cycle of nineteen years, and the date of the Sunday

next after it changes according to a cycle of twenty-eight years. The pattern and rhythm of these successive dates for Easter repeats itself only after 532 years have passed (since 532 is the least common multiple of 19 and 28).

These 532 years form the ***Great Paschal Cycle***. There have been just fourteen complete Great Paschal Cycles since the traditional creation of the world on the last days of February and the first days of March in the year 5508 before Christ. The fifteenth such cycle began on 1 September 1940 (by our calendar).

We referred above to the kaleidoscopic nature of Church Slavonic literature. It is these cycles of time that govern the turning of that kaleidoscope, to speak in a metaphor.

All of the liturgical books of the Slavic Orthodox Churches, and many of the non-liturgical books as well, are organised according to these Cycles. Since the great majority of all texts in Church Slavonic have precisely specified places within the liturgical life of Slavia Orthodoxa, these cycles also establish the structure or system of that literature.

These books may be divided into two great classes. Some of them contain the texts for the liturgical occasions that are determined by the Cycles of the Day, the Week and the Year alone. These may be called the *fixed* feasts (and fasts). Others contain the texts for the liturgical occasions that depend on the date of Easter, and thus occur on different dates from one year to the next. These may be called the *moveable* feasts (and fasts). A few books contain the Biblical texts that are used throughout all the Cycles, and a few other books contain those texts that are used on occasions that do not depend on any of the Cycles. The table on the following page shows the principal books in each class.

For about one third of the year, texts for one and the same date must be taken not only from the appropriate volume of the Cycle of the Year—the *Prolog* and each kind of *Mineia*—but also from the appropriate book for the Easter Season. As the date of Easter varies from one year to the next, the exact ways in which texts from these two sets of books are combined will also vary. The pattern of these combinations will repeat itself only after 532 years have elapsed.

Thus almost all works of Church Slavonic literature 'dance with one another', so to speak, according to a rhythm so elaborate and so complex that it does not repeat itself until 532 years have elapsed. No single human lifetime is long enough to witness more than about one-fifth of the whole grand cycle of the liturgy and ritual of the Slavic Orthodox Churches. Only a person who has lived a very long life and also happened to be born in one or another of a very few years within this 532-year cycle will even live to witness Easter falling on each one of its possible 35 dates in the calendar.

The Cycle of the Day

- *Chasoslov* (Book of Hours), the services at certain hours of the day

The Cycle of the Week

- *Sluzhebnik*, the Eucharist on Sunday (and other weekdays)

The Cycle of the Year (the Julian Calendar and the Fixed Feasts and Fasts)

- *Minei Sluzhebnye*, services for the fixed liturgical days
- *Minei Chetii*, long *Lives* of saints and related writings
- *Prolog*, brief *Lives* of saints, read at Matins

The Cycles of the Moon and Sun (Easter and the Moveable Feasts and Fasts)

- *Triod' Postnaia* (Lenten Triodion), services from before Lent to Easter
- *Triod' Tsvetnaia* (Festal Triodion), services from Easter to after Pentecost
- *Oktoikh*, hymns on a repeating cycle of eight successive weeks

All Cycles (Biblical Texts)

- *Evangelie*, the four Gospels
- *Apostol*, the rest of the New Testament except the Apocalypse
- *Psaltir'*, the Psalter and a few other psalm-like Biblical passages

Independent of the Cycles

- *Trebnik*, rituals for variable occasions, e.g. baptism or burial

The Principal Liturgical Books of the Slavic Orthodox Churches

This 'dance of the texts' is not a dance between individual units with impenetrable boundaries between them—which is the closest we come to such a thing in the literatures of Western Europe—but a dance between units that may be discrete individual texts when examined in one way, but just parts of a whole when examined in another way.

Taken as a whole, this entire body of texts in their ever shifting dance may be the greatest creation of Slavia Orthodoxa and Europa Orthodoxa, and one of the most vast, complex and elegant works of art, especially verbal art, ever conceived by the mind of humankind. It has been conceived on a scale more than human. Hence it has mostly been overlooked by scholars of past generations.

2.3 *The Traditional Cosmology of Slavia Orthodoxa*

All of these cycles of time are part and parcel of the traditional cosmology of the Slavic Orthodox Churches, which was not replaced by any Western cosmology in the consciousness of most Orthodox Slavs until well into the 1800s.

Here the term ***cosmology*** is not used as a scientist would, to refer to a branch of physics, but as cultural historians use the term, namely, to refer to *a culture's implicit theory or map or model of the universe in which it lives.* From at least the late stone age onward, every culture is likely to have possessed a cosmology—not always internally consistent, but always historically significant—which can be explicated. For a cultural historian, our current scientific cosmology might be only the most recent of these theories or maps or models. Eventually, perhaps, it may seem just as primitive to our remote descendents as medieval and early modern cosmologies seem to us.

The traditional cosmology of the Orthodox Church derives in large part from that of the Ancient World before the coming of Christianity. It provides a model for both space and time, or more concretely, for both geography and chronography.

According to this model, time has a definite beginning and a definite end, and its length is limited and finite. It is a part of creation, and *not* a dimension on some grid or an axis on some graph on which all things that exist can be plotted, or must have their place. In contrast to creation, God exists outside of and wholly apart from all time and space.

Though time is linear and finite, it is measured out from its beginning by the cycles that we have mentioned above: the Cycle of the Day, the Cycle of the Week, the Cycle of the Year, the Cycle of the Sun, the Cycle of the Moon, and the Great Paschal Cycle. (It is also measured by the Cycle of the Indiction, fifteen years in length, but this cycle has no liturgical use and was not mentioned above.)

All of these cycles began their courses together on the fourth day of Creation, that is, on the first Wednesday, when the lights in the firmament of the heaven were created 'for signs, and for seasons, and for days, and for years' (Genesis 1:14). That Wednesday was thought to be 1 March in the year 5508 before Christ: only there do all seven cycles coincide at their beginning. That too is the year obtained when one counts backward from known historical events through all the genealogies of the books of the Old Testament.

The starting points of all seven cycles will not coincide again until the year 7980 (=15×532) after the Creation of the World. If I have not miscalculated, we still have over 450 years to go until the end of the fifteenth Great Paschal Cycle. Whether at that date or some other, these seven cycles will all end only when time itself is over, at some unknown point in the future when 'the first heaven and the first earth were passed away; and there was no more sea' (Revelation 21:1).

So much for time! What about space? Right at the centre of the Cosmos lies our spherical Earth, which is composed of four elements—Earth, Water, Air and Fire—in various combinations. The inhabitable part of Earth may be mapped as a disk surrounded by the waters of the world-encircling Ocean.

This disk was usually drawn with East at the top. Asia occupied its upper half, Europe its lower left quarter, and Africa its lower right quarter. The Mediterranean Sea, drawn vertically, separated Europe and Africa from one another. Somewhere in the East, towards the very top of the disk, is the Garden of Eden, guarded by 'Cherubim and a flaming sword' (Genesis 3:24). At the end of time, it is in the East that Christ will appear as he comes again in glory to judge the quick and the dead (fig. 2).[22]

On such a map, the Holy City of Jerusalem stands at the very centre of the known world. As we zoom in, we find at the centre of Jerusalem the Church of the Resurrection (which Western Europeans call the Church of the Holy Sepulchre). Indeed, from at least the eighth century up to the present a small spot in that church has been identified as the exact centre of the cosmos, the veritable *navel of the world*. It is a matter of circles within circles, each having the same point as its centre.

The round Earth and its environs constitute the sub-lunary realm, or the sphere below that of the Moon. In the interior of the Earth lies Hell. If we do not go there, but move outward and upward, we leave the four elements wholly behind us as we pass through the successive spheres of the seven planets, or Wandering Stars, namely, the Moon, Mercury, Venus, the Sun, Mars, Jupiter and Saturn, in that order. Continuing to move in that direction, we next pass through an eighth sphere, that of the Fixed Stars. Beyond the eighth sphere may lie yet other spheres, but the specifics were controversial. Continuing ever upward, we would enter the Empyrean Realm. There dwell the Saints as well as the nine orders of angels: Angels, Archangels, Principalities, Powers, Virtues, Dominions, Thrones, Cherubim and Seraphim. And then God, Who is beyond all speech and all thought!

This cosmology, as the Orthodox Slavs understood it, was neither exclusively naturalistic nor exclusively 'supernaturalistic' (to coin a word). In this cosmos the material and the spiritual, the natural and the supernatural, shared the same existence and activity. Christian men and women, saints and angels all lived cheek by jowl with one another in this cosmos, and the human world was not so sundered from that of saints and angels as it had long ago come to be in Western Europe.

Indeed, the constant presence of these unsensed, living beings—angels and saints—seems to have been the single most important fact of human life for the Orthodox Slavs who lived in this cosmos, for these beings, unlike mortal men and women, were thought to dwell very near the Throne of God and to

[22] See fig. 2, an eighteenth-century Russian wood-cut map of the world according to this traditional cosmology that was recently acquired by the New York Public Library, which is reproduced in colour in Cynthia Hyla Whittaker, Edward Kasinec and Robert H. Davis Jr, *Russia Engages the World, 1453–1825* (Cambridge, Mass. / London, Harvard University Press, 2003), pp. 4–5.

know His glory at first hand. Accordingly, the single most important thing that these same mortal men and women could do was to draw near to the saints and angels and join them in their eternal worship and praise of God. The entire liturgy and ritual of the Orthodox Churches is steeped through and through with language that explicitly proclaims this shared worship of mortals together with the saints and the angels.

3. The Solution of the Puzzle

And thus we have come near to a possible solution to the puzzle of early printing in Old Cyrillic—*why* early printing in the Old Cyrillic alphabet developed so differently in Slavia Orthodoxa than in Western Europe, and yielded such different results. We have claimed that it cannot be understood as a *necessary* historical development, but only as a *contingent* one. That is, it was not the automatic or predetermined effect of any set of economic or social or political causes, but the result of a deliberate choice made over and over and over again by most of the early printers working in many lands and centuries throughout Slavia Orthodoxa.

Though these printers worked in relative isolation from one another, and many of their presses were in operation for relatively short periods of time, almost all of them made the same choice—though any of them could have chosen otherwise, and a few of them did choose otherwise. In nearly complete independence of one another, most of them chose to print edition after edition of the few dozen liturgical books used in the Slavic Orthodox Churches, and *not* to respond significantly to the very real market that clearly existed for copies of other texts.[23] Their choice was not caused by powerful economic forces, nor by social or political constraints or distraints. Nor was it a choice made once in the past and communicated to these early printers down through several centuries and across great distances.

If it was none of these things, what then can explain so many independent choices, all made in the same way? When we find this sort of thing—and we do find it very often in human history—it is *always and only* the result of shared assumptions, of a shared world-view, or a common model and theory of the world in which the men and women lived who made these independent, yet similar choices. Starting from the same assumptions and world-view, moved to action by the same circumstances, people will independently make the same

[23] There were exceptions, of course. Though these exceptions—for instance, Frantsisk Skaryna—have greatly attracted the attention of modern historians of printing because of their marked individuality and originality, they still remain very small drops in the bucket of early printing in Old Cyrillic. Most of that bucket was filled by the products of the Moscow Printing House and the other presses that followed much the same programme of publications.

choices as one another.[24] They have done this over and over, throughout human history.

With few exceptions, the early printers of Old Cyrillic books and their customers were Orthodox Slavs. Almost all of them unconsciously shared the common world-view that characterised Slavia Orthodoxa from the fifteenth century well into the eighteenth. They lived out their lives within the common patterns and rhythms not only of Orthodox liturgy and ritual, but also of daily life. They worked in similar circumstances, albeit in different centuries and lands. And thus they made similar choices independently of one another. It should not surprise us that their choices were different from the choices that other printers made in other parts of Europe, for these other printers adhered to other forms of Christianity. By 1450 Western European printers had come to hold other and quite different world-views; they had come to live by other and different patterns and rhythms of sacred and secular time and space; and they worked under other and different circumstances. Of course they made different choices! How could it have been otherwise?

With respect to our puzzle and its solution, the most significant element of the world-view that prevailed throughout Slavia Orthodoxa during the centuries in question was its model of the cosmos, which we have just described. And the grandest creative expression of that world-view was the whole complex structure of the liturgy and rituals of its Orthodox Churches—a creation which it shared in large part with the Greeks and the other Orthodox peoples.

The single most important feature of this world-view was mentioned in the final two paragraphs of the previous section. This was the constant and unexamined belief that the ordinary world of men and women was not at all sundered from the world of saints and angels, that each person's every task and activity was carried out in the close and welcome company of these disembodied sentient beings who were one's close neighbours.

To moderns this may seem like the rankest ignorance or superstition, or like a poetic fantasy, or—somewhat more charitably—like an admirable theological conceit that may be valid in theory, but can have no immediate practical consequences. But in history it is not so much the real or the material that will have far-reaching practical consequences, as the immaterial and the unreal. It is not so much one's external world as one's internal world-view that guides one's choices in life.

Given that the Orthodox Slavs saw and experienced their world in this way,

[24] This is, for me, the fundamental axiom for the understanding of all human history and behaviour. Like every axiom, it cannot be proven in and of itself, only accepted or rejected. I came to it initially from the discipline of anthropological linguistics, where it was most persuasively formulated in a series of papers by Benjamin Lee Whorf that appeared during the years 1936–1941 (reprinted in Benjamin Lee Whorf, *Language, Thought, and Reality: Selected Writings*, ed. John B. Carroll (Cambridge, Mass., M.I.T. Press, 1956), see especially pp. 134–59, 246–70).

what other activity could possibly have been more important to them than the duty or liturgy (in Greek, λειτουργία originally meant 'a public duty') that they shared with their unsensed neighbours, the saints and angels—than performing the liturgy and ritual of the Orthodox Church? As a rule, the men and women of Slavia Orthodoxa, during the centuries that concern us, were quite sure that the traditional cosmology of their culture was true and well-founded. It is not hard to find passages in the original writings of the Orthodox Slavs that take just that for granted.

Given all this, naturally the printers of Slavia Orthodoxa supposed that liturgical books were the most important and useful books they could ever print. This certainty of theirs had nothing whatever to do with economics or politics—or with any aspect of their material world, as we understand it—but everything to do with their world-view. Naturally they chose to print liturgical books in far greater numbers than all other texts put together. They could have chosen to do otherwise, and a few printers did so choose. But it was their shared world-view, and not their shared world, that impelled the others to choose quite independently of one another to print the same.

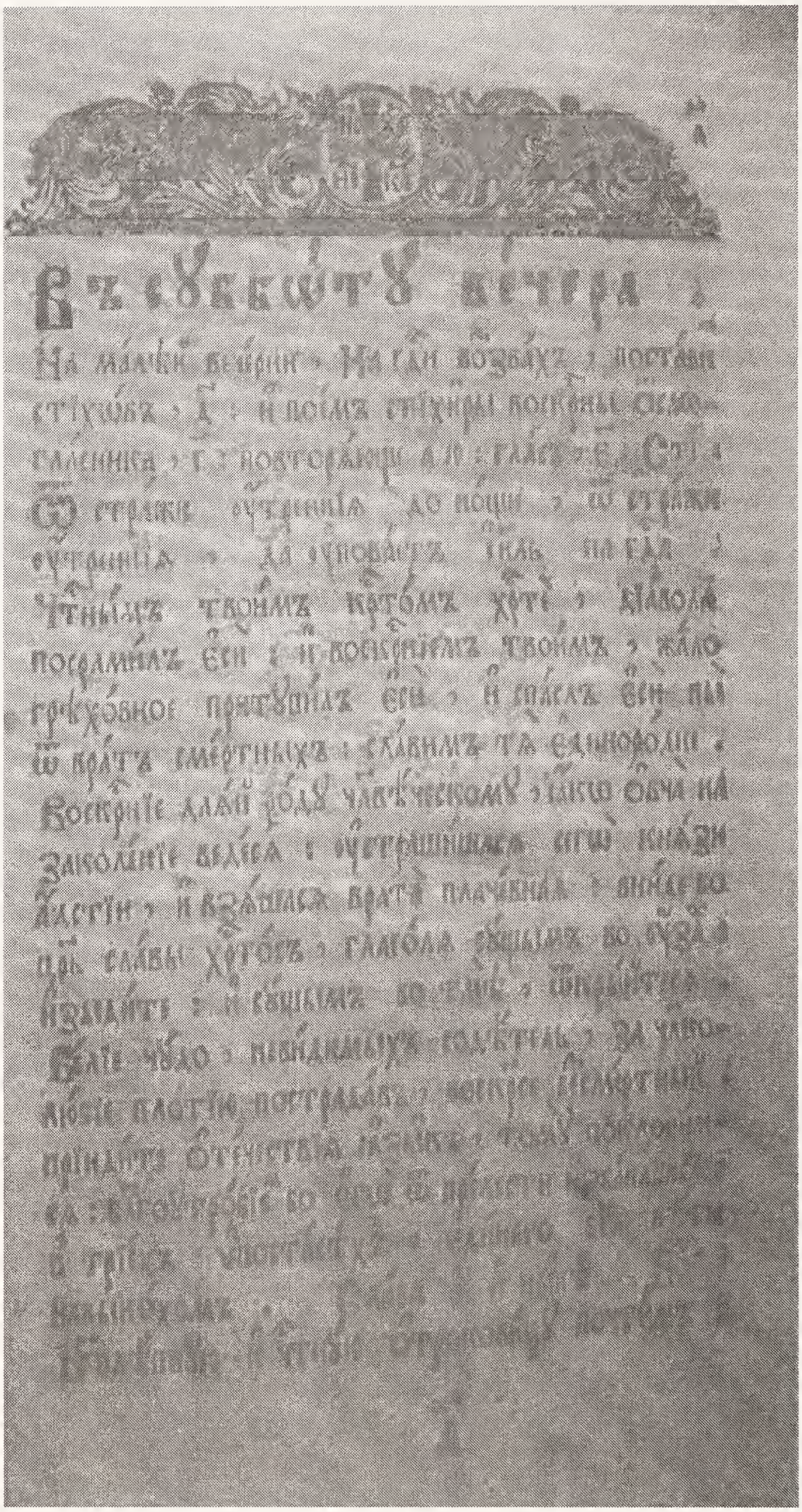


Fig. 1. *Oktoikh sirech Osmoglasnik*. Moscow, [Pechatnyi dvor], 1712. NYPL, Astor, Lenox and Tilden Foundations.

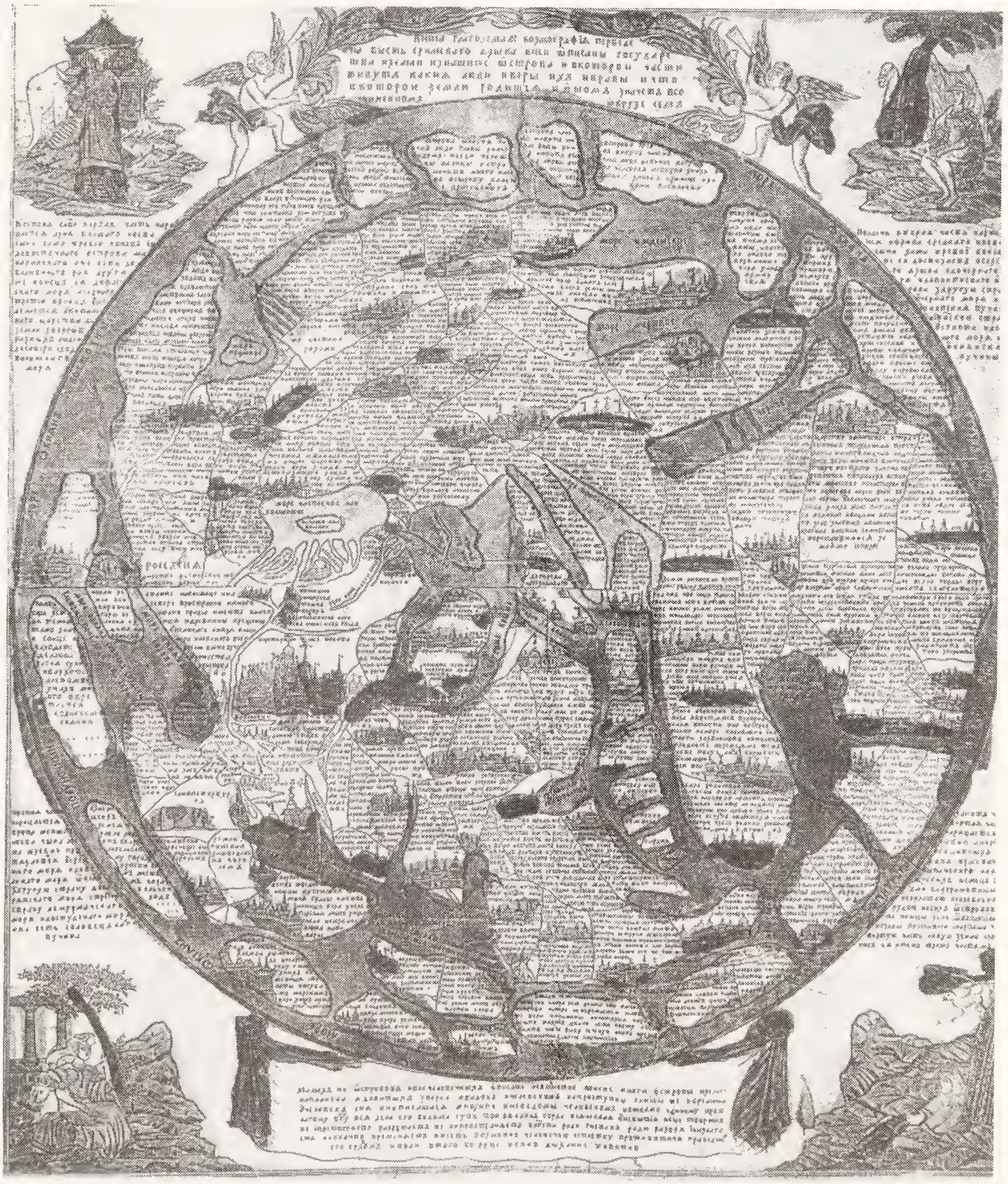


Fig. 2. A Russian 'Mappa mundi', first third of the eighteenth century. NYPL, Astor, Lenox and Tilden Foundations.

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